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APPENDIX B

RECLAMATION PLAN

B.1 INTRODUCTION

This Reclamation Plan for the Proposed Action has been developed for the site-specific conditions found along the transmission line right-of-way (ROW), the substations, and access roads. Reclamation refers to activities to return land to conditions and productive uses as similar as practical to its pre-disturbance conditions and use, or to a site-specific desired plant or habitat community (Nevada State Clearinghouse 1998). The purpose of this Reclamation plan is to define actions needed to restore plant communities and associated wildlife and range habitat, prevent substantial increases in invasive, non-native species, prevent project-related soil erosion and sedimentation, restore the visual character of the project area to pre-construction conditions and establish protocols for implementing and monitoring required restoration efforts. BLM reclamation goals emphasize the protection of existing native vegetation; minimal disturbance of the existing environment; soil stabilization; and establishment of native vegetation consistent with land use planning. This plan describes the process and methods that would be used in meeting these goals. A detailed final Reclamation Plan would be developed in consultation with BLM and included as part of the construction, operation and maintenance (COM) plan.

This plan incorporates the following standard operating procedures for activities administered by the Carson City Field Office, as outlined in the Consolidated Resource Management Plan:

- “Permanent roads will not be constructed into temporary project sites. Existing access roads, off road travel, or temporary roads which will be rehabilitated after construction activity will be used.
- Application of herbicides on proposed treatment areas will be in accordance with procedures established in Bureau Manual 9011 and 9015 and the Final Environmental Impact Statement and Record of Decision, Vegetation Treatment on BLM Lands in Thirteen Western States (1991). Herbicide use on BLM lands in Nevada is covered by the *Vegetation Treatment on BLM Lands in Thirteen Western States Final Environmental Impact Statement* (1991).
- All areas of new surface disturbance will be rehabilitated, where such action is necessary and practical, to replace ground cover and prevent erosion.

- The clearing of vegetation from all project sites will be restricted to the minimum amount necessary.
- All construction, maintenance, or rehabilitation activities on public lands will use every reasonable means to minimize erosion and soil damage, including but not limited to, construction of water bars, cross ditches, or other structures as required by the authorized officer.
- During the pre-construction and construction periods, the Bureau will make modifications to any land use authorization necessary to maintain stability of geologic materials, fish and wildlife habitats, the environment, and the public interest.
- Revegetation of disturbed areas will be required as specified by the Bureau. The appropriate seed mixture and proper planting techniques will be specified by the Bureau.
- Authorized public land users will prevent or control damage to scenic, aesthetic, cultural and environmental values (including damage to fish and wildlife habitat), damage to federal property and hazards to public health and safety (BLM 2001a)”.

B.2 PROJECT BACKGROUND

The construction and operation of the proposed 120-kV transmission line, and substations would require both temporary and long-term land disturbance. The proposed route is approximately 34 miles long and the longest alternative route under consideration is approximately 46 miles long. An approximately 30-foot ROW would be needed in most areas for construction activities including access roads, overland travel routes, transmission pole installation, and line stringing. In areas where the proposed route encounters steep slopes, a wider ROW would be defined to allow access road switchbacks or otherwise allow space for construction activities. Additional roadwork outside of the construction ROW, including creating new spur roads from existing roads, may be required once the final route has been selected and project design has been completed. Project construction would also require setting up staging areas to serve as storage and handling sites for construction material, equipment, fuel, service trucks, spare parts, and construction worker’s vehicles. Two new substations, each occupying approximately 2.5 acres, would be constructed in the Spanish Springs Valley and in the Stead area.

Measures to avoid or minimize land disturbance are integrated into the project design and construction planning. Where possible, existing utility corridors and access roads would be used. Temporary road construction would be minimized. Additional vegetation clearing would be kept to the minimum required to maintain safety and operational standards. Some existing four-wheel drive routes and two track roads may need to be improved or widened to accommodate equipment and project needs. Typical road width disturbance would be approximately 20 to 30 feet. Overland travel from structure to structure would also occur within the ROW and would involve off road vehicle traffic over existing terrain. Intermittent blading with bulldozers or equivalent machinery would be required to allow for overland travel in areas of rough terrain. Surface material, including rock, would be bladed and side-cast to allow for passage of rubber-tired vehicles. Vegetated areas may be hydro-axed instead of bladed. A project Storm Water Pollution Prevention Plan (SWPPP) would be prepared to define specific practices to avoid erosion during construction and minimize loss of soils.

All affected land that would not be part of the permanent facilities, existing access roads, or new roads required for maintenance would be reclaimed in accordance with the final Reclamation Plan. These would include any new construction roads, overland travel routes, pole erection sites, wire setup sites, staging

areas and disturbed land adjacent to facilities. SPPC would be responsible for providing the reclamation team and post-reclamation monitors and for ensuring that all phases of the final Reclamation plan are implemented.

B.3 DISTURBANCE LEVELS AND RECLAMATION GOALS

This section describes the two broad types of expected project disturbance and broad reclamation goals.

Long-term Disturbance

Certain areas would be affected by the placement of facilities for the life of the project. The use of these areas would be long-term and the landscape would be permanently altered through removal of vegetation, site leveling, modification of natural drainages, and placement of facilities. Permanently disturbed areas would include the location of the inspection road and any other retained access roads, the transmission line tower bases, and the substation facilities. Reclamation goals in these areas include minimization of the permanent disturbance footprint, restoration of native plant cover where possible, and the prevention of the establishment or spread of invasive non-native species and invasive weeds through monitoring and treatment. At the end of the useful life of the facilities these lands could be reclaimed as well.

Temporary Disturbance

Most of the anticipated land disturbance associated with the project would be temporary and concurrent with the period of construction. Different levels of impacts to the land are anticipated and different levels of effort would be required to reclaim these sites.

Vehicle and equipment use in off-road situations would cause minimal to moderate disturbances to vegetation and soils. Vegetation would be crushed but not cropped. Soil would be compacted, but no surface soil would be removed and there would not be significant modification of the landscape. Examples include utility line tensioning and pulling areas, tower pad sites, and spur roads to towers. Even though vegetation may be damaged and even destroyed, the surface soil and seed bank would remain in place. Some crushed vegetation would likely regenerate after disturbance ceases and self-seeding of many species would be possible.

Moderate disturbances would be associated with brushing off vegetation to improve or provide suitable access for other equipment. Soils would be compacted, but surface soil would not be removed. Examples include areas that are mechanically treated with a hydro-axe by roller chopping to allow equipment access. Heavy disturbance would be associated with blading and soil removal. All vegetation in the impact zone would be removed, the soils would be compacted and the soil would be displaced (BLM2001b).

Reclamation goals for areas affected by temporary disturbances are to restore plant communities and associated wildlife and range habitat; prevent substantial increases in invasive, non-native species; prevent project-related soil erosion and sedimentation; and restore the visual character of the project area to pre-construction conditions.

B.4 PRE-CONSTRUCTION ACTIVITIES

Prior to construction all existing potential access roads and previously disturbed areas that could serve as staging areas would be identified to avoid additional unnecessary disturbance. If any special status plants are found during subsequent inventories, BLM would be consulted regarding appropriate avoidance or

mitigation actions. As part of the COM Plan, all areas affected by the project would be identified and an estimate of acreage for each level of disturbance would be made. A determination would be made with BLM on what restoration actions would be needed to achieve reclamation goals given anticipated disturbance levels, and existing site conditions including any habitats requiring additional restoration efforts to insure plant viability or to enhance wildlife needs.

BLM would be consulted regarding the collection of native seed for use in revegetation. Generally native seed collection has not been required in this part of Nevada, but may be desired to enhance germination success and replicate existing conditions. If required, a qualified contractor would conduct native seed collection prior to commencement of construction. Pounds of mature seed needed from the major shrub and grass components identified for the right of way would be based on the estimate of acres of temporary disturbance. The BLM would provide guidance on species from which to collect seed and provide any necessary permits. Standard seed collection protocols would be followed. Seed would be collected during the appropriate season and no more than 50 percent would be collected from any one population to ensure that seed source plant populations would not be adversely affected. Whenever possible, seed would be collected from areas anticipated to be disturbed by the project and supplemented by other locally collected and adapted native seed. Seeds would be collected, cleaned, tested for pure live seed (PLS), certified as weed-free, and stored by the contractor until use. Seeds would be stored in paper bags, labeled with the date and exact collection location. Some of the material may be pelleted prior to application. Whenever possible cacti would be flagged, salvaged, and secured at a temporary nursery site for care and maintenance and would be replanted as part of the reclamation effort.

B.5 RECLAMATION PRACTICES DURING CONSTRUCTION

Existing roads and disturbed areas would be used to the extent practical in order to keep the clearing of vegetation to a minimum. Topsoil would only be removed from areas that require blading and excavation and would be salvaged and replaced after project construction. Salvaged topsoil would be segregated from any subsoil or spoil materials. Care would be taken to ensure that salvaged topsoil is not stockpiled among weeds. Topsoil segregation helps revegetation success as most plant-essential nutrients are found at or near the surface. Non-weedy organic matter from hydro-axing would be salvaged and stored adjacent to the disturbance area to be redistributed on in reclaimed areas. Rocks would be salvaged for redistribution within the project area as in a manner would that would not interfere with natural drainage patterns and would enhance natural appearance. Revegetation would be initiated as soon as possible after completion of a construction segment. In areas of highly erodible or compactable soils, additional measures such as the use of balloon-tire vehicles and geotextile cushions would be used to minimize surface disturbance, soil compaction, and topsoil loss. Temporary erosion control and soil stabilization measures as detailed in the COM plan would be maintained during construction and until vegetation is established. If construction or reclamation activity is delayed for extended periods, such as when seeding cannot be completed due to weather or season, the area of concern should be mulched. Measures to minimize the potential for soil erosion due to project construction activities would be implemented in all project areas.

B.6 SITE PREPARATION

For areas where the soil has not been removed site preparation may include selectively decompacting terrain and erasing tracks. Where moderate or severe compaction exists, the surface would be scarified, tilled or harrowed to a depth of 6 inches depending on site-specific conditions. In many cases leaving the

soil intact or light harrowing may be preferred to reduce the potential loss of soil moisture, the spread of undesirable rhizomatous plants and/or erosion.

In areas where soil has been removed, regrading would be completed prior to replacing topsoil. The disturbed areas would be restored to approximate the original contour of the land as closely as possible. Upon completion of grading and stabilization, disturbed areas would be inspected for slope stability, relief, topographic diversity, acceptable surface water drainage capabilities, and compaction. Once the disturbed areas have been re-contoured and compacted, topsoil would be re-distributed over the entire disturbed area from which it was salvaged. Redistributed depths of topsoil would vary depending upon available stripping depths. Unobtrusive water catchment features may be used to enhance seed germination and success. Replaced surface soil would be left in an unscreened condition. The site would be left adequately rough after surface soil placement to provide micro sites for seed germination, to reduce soil movement, and to improve moisture permeability between the soil and subsoil. Prior to seeding, additional scarification may be performed to enhance revegetation. Additional erosion control and soil stabilization measures may be required to minimize soil movement after site preparation. For areas that have been cleared, salvaged organic matter and rocks would be replaced back onto the site and any salvaged cacti would be replanted. Large boulders can be placed to inhibit travel in areas where rehabilitation is in progress.

B.7 REVEGETATION RECOMMENDATIONS

A variety of environmental conditions within the project area make the establishment of desirable plant species difficult. Low precipitation provides very little available moisture for germinating seeds. The project area receives anywhere from 4 inches to 13 inches of precipitation per year, depending on elevation. The lowest portions of valleys usually support only salt tolerant species. The edges of the valleys generally have deep alluvial deposits from the constant but slow erosion of the mountain ranges. The mountain ranges often have shallow, lithic soils but support a greater diversity of plants due to the increased precipitation that occurs there. With the exception of the Truckee River, there is little potential for riparian habitat and this area is highly disturbed by tall whitetop, a very aggressive noxious weed. Human and wildfire disturbances to the vegetative communities have created many areas dominated by non-native, weedy species. These species could spread to areas disturbed by construction activities and compete with planted species for the limited resources. The following sections describe the seed mix selection, timing of planting, seeding methods, maintenance, and invasive weed control measures that would be implemented to ensure revegetation success.

Seed Mix Selection

Different seed mixes and seeding rates would be required in order return land to pre-disturbance conditions or to a desired plant or habitat community. Appropriate site-specific seed mixes and rates would be developed in consultation with the BLM and included in the COM Plan. Locally collected seed and off-site natives, which are sourced to Nevada, would be used to the extent practicable. The use of non-native species is not planned, but non-persistent exotics could be used when necessary to quickly reestablish vegetation, if their need is documented. Several factors would be considered when selecting species that would be most appropriate and successful for site-specific mixes. Seed mixtures would be based on erosion control, forage, production, elevation, soils, vegetation community composition, and precipitation. An important goal is to restore the distribution and density of native plant species in the different plant communities that are affected by the project. Site-specific moisture availability and soil

conditions and chemistry must be taken into account. The ability of plants to compete with non-native invasives and to become established from seed in disturbed areas is also a consideration. Other factors may include the availability of appropriate seed stock, erosion control in difficult sites, the enhancement of habitat for wildlife purposes and/or the desire to provide a green strip in areas where invasive weeds are prevalent. These choices would also be guided by BLM policies and the *Nevada Guidelines for Revegetation* (Nevada State Clearinghouse. 1998). A diverse mix of site-adapted native shrubs, forbs and grasses consisting of at least three species from each of the three plant forms has proven to be most successful for revegetation projects in Nevada (Ross 2001).

Seed Planting Methods

Seeding and planting would be coordinated with other reclamation activities to occur as soon after seedbed preparation as possible and within 90 days of soil replacement if practical. Fall seeding (October to December) is generally preferred. Steep slopes and areas adjacent to streams or arroyos would be seeded immediately after final grading. Planting methods would be based on site-specific factors such as slope, erosion potential, seed type, and the size of the area in need of revegetation. A combination of approved seeding methods would be used to ensure germination including drill and broadcast as appropriate. Hydroseeding is not recommended in arid areas. Mulch applications may be used and would be based on local soil moisture conditions, germination requirements of selected species, and adaptation of seed soil temperature. For areas where the soil has not been removed, selective overseeding would be conducted to assist in reestablishing a desirable native vegetative cover that would stabilize the soils and slow the potential invasion of invasive weeds. Interseeding, secondary seeding, or staggered seeding may be required to accomplish revegetation objectives. Follow-up seeding or corrective erosion control measures may be required on areas of surface disturbance that experience reclamation failure.

A range-type drill, or similar device, would be employed on level to gently sloping areas where the lack of rock fragment content allows drilling operations. The seeder would be followed with a drag packer or roller to ensure uniform coverage of the seed and adequate compaction. Drilling would be done along contour lines where practical, not up and down the slope. Broadcast seeding would be employed on steep and/or rocky areas where drill seeding is not practical. Seed would be broadcast using manually operated, cyclone-type bucket spreaders, mechanical seed spreaders or blowers. Seeds would be mixed frequently in spreader hoppers to discourage settling. Where possible, broadcast areas would be chained or harrowed to cover seed. On small or inaccessible areas, hand raking would be used to cover seed.

Maintenance

Signage would be placed at regular intervals at all reclamation areas to deter vehicular damage. Measures would be taken to prevent unauthorized use of the ROW as a roadway. Access would be blocked at locations specified by agency representatives, through fencing, salvaged boulders, or the construction of berms to provide a barrier to vehicles. Measures would be taken in consultation with BLM and landowners to fence or otherwise protect the new plantings from livestock and wildlife. In areas where landscape planting may be used (for example in urban areas) some supplemental watering may be necessary to assist in germination and establishment during the first year.

Weed Control

Throughout the construction and reclamation process measures would be taken to prevent the establishment and spread of invasive weeds within the ROW corridor, around the substations, and along access roads used solely or primarily for project operation and maintenance. All vehicles and equipment

would arrive at the work site clean and free of soil and debris capable of transporting invasive weed seeds, roots, or rhizomes. Any pre-existing infestations in project areas would be recorded for reference in clearing the ROW and ancillary facilities sites. In areas where major infestations have been identified, stripped vegetation would not be returned to the reclamation site. Any straw bales used on the project for sediment barrier installations or mulch distribution would be certified weed-free. Special care would be taken in areas of potential infestation to reseed and establish vegetative cover as soon as possible after the disturbance.

Site-specific weed control measures would be developed in consultation with BLM and landowners and documented in the COM Plan. Upon locating and identifying invasive weeds, mechanical or appropriate herbicides may be applied on the identified weed infestations along the construction ROW and project area to reduce the spread or proliferation of weeds. If mechanical methods are used, subsequent seeding would be conducted to re-establish a desirable vegetative cover that would stabilize the soils and slow the potential re-invasion of invasive weeds. Seed selection would be based on site-specific conditions in consultation with BLM. All herbicides must be applied by qualified, licensed personnel and used in accordance with label directions. Prior to herbicide application, any required permits would be obtained. Application of herbicides would be suspended under windy or wet condition or when precipitation is predicted.

As part of the rehabilitation effort new plantings would be monitored periodically for invasive weeds following construction and reclamation of the project. Mechanical treatment followed by additional native seeding is the preferred treatment for weed control among the new plantings in revegetated areas.

B.8 MONITORING

The goal of reclamation monitoring is to compare the restored areas with adjacent undisturbed areas in order to evaluate the rate of site recovery and success of restoration actions. The goals for species composition and vegetation cover would be achieved within 5 years of implementation. Preliminary success criteria for species composition is 60% or higher of the mean number and type of desirable species as in the reference sites. Success criteria for vegetation cover is 50% or higher of the vegetation cover of the reference sites. In many cases, areas adjacent to the project area are developed or otherwise disturbed by fire or weed infestation. Success criteria in these areas would be based on standards developed in consultation with BLM.

In addition to these success criteria, revegetation performance would be evaluated in each year following seeding to ensure successful germination and survival of seedlings. It may take as many as 3 years of seeding to ensure successful germination in some areas (BLM 2001c). Success criteria for germination would be developed in consultation with BLM and included in the COM Plan. Weed management would be considered successful if existing invasive weed infestations in areas disturbed by construction were no greater in density and extent one year following construction than they were when last monitored prior to construction, and when revegetation criteria were met (BLM 2001b).

Monitoring Sites

In consultation with BLM, an appropriate number of monitoring sites would be established along the ROW and other project areas based on soils maps and corresponding range site descriptions. The range site description provides an idea of the vegetation potential of the area, but the success criteria would be

based on adjacent plots, where possible. Each major range site would include intercept transects in both adjacent undisturbed habitat and in within the disturbed portion of the ROW. The number of transects and transect length would be established in consultation with BLM. The vegetation attributes to be measured in each key area include percent cover and species composition of perennial shrub species. All perennial shrubs and perennial grasses would be recorded. Recording forms and standards would be developed with the assistance of BLM. The success of the revegetation effort would be evaluated by statistically comparing the plots in the undisturbed area with those located in the ROW disturbance. To enable relocation and resampling of these plots the corners of each plot would be permanently marked with rebar stakes. The UTM coordinates of the monitoring site corner posts would be recorded using a GPS unit. Each site would be monitored at one year, three years and five years after reclamation (BLM2001b).

A staked photopoint would be established at each monitoring site and used throughout the monitoring phase of the project. Photographs would be taken during each visit from both southern and northern perspectives and would include the area within the permanent plots. Additional photo points would be taken in several areas where significant changes in vegetation are seen but are not reflected in the range site descriptions or in areas where large spans of the same range site occur along the ROW but key areas were not established. All photos would be date stamped and would include a sign or placard identifying the project and the location.

Annual Monitoring

All reclaimed areas would be surveyed annually to assess reclamation progress, seed germination success, erosion controls measures, and any weed control problems. Surveys would be conducted on foot and/or by vehicle and would include all areas disturbed during construction. Each reclamation site would be revisited and assessed qualitatively. Documentation would be made of any potential problems and recommendations for any maintenance or corrective actions would be provided to BLM. Typical monitoring issues would include germination failure, vehicle or animal disturbance, erosion, removed barriers and weed encroachment.

The location, population size, density and species of any invasive weed infestations would be recorded, mapped and photographed. Any treatment for construction-related weed populations would be conducted in consultation with BLM or other landowners. Treated sites would continue to be monitored and photographed annually.

Any problem areas identified during annual inspections would be evaluated for possible remedial or corrective actions. Measures could include supplemental seeding, mulching, additional weed control treatments, physical barriers, use of matting, or other erosion control features. All corrective actions would be subject to agency approval.

Reporting

SPPC would provide the BLM original data sheets, map locations, photographs, and a report of the results from each monitoring session at the transect monitoring sites. A report on the results of the annual monitoring efforts would be provided along with any photographs and maps of invasive weed populations. A final report would be prepared after the final monitoring session that would include the last year's monitoring session and a summary of the results of findings from the monitoring program. In

order to guide future efforts, the final report would include an evaluation of which actions were successful and which were unsuccessful.

B.9 REFERENCES

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